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Figure 1.—A black walnut tree almost completely defoliated by anthracnose.

Symptoms

Leaves, nuts, and occasionally, shoots of the current season's growth are all likely to be attacked. Tiny dark-brown or black spots, circular to irregularly circular, appear on infected leaves (fig. 2). Gradually, these spots become more numerous, enlarge, and often merge to form still larger dead areas. Yellowish to golden leaf tissue usually borders these spots. Infected leaves and leaflets generally fall prematurely, but some infected leaflets remain attached to the tree for most of the season.

Premature defoliation caused

by the anthracnose fungus affects the quality and growth of nut meats. Nuts from diseased trees commonly have meats that are dark, unattractive, and shriveled. Sunken, necrotic spots, smaller than those on the leaves, appear on husks of infected nuts (fig. 3). Nuts that become diseased when immature do not develop normally and many drop prematurely.

Lesions also appear on current shoots and form dead, sunken areas that are oval to irregularly circular and light grayish brown, dark reddish brown at their margins.



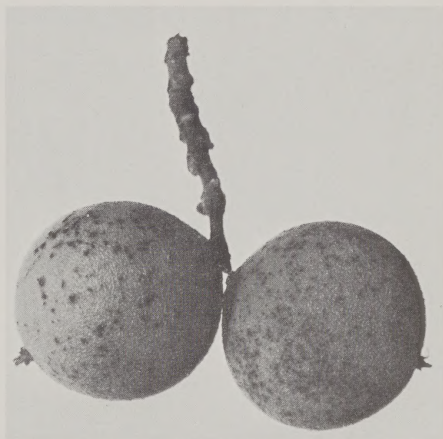
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Figure 2. — Anthracnose spots on a black walnut leaf.

Life History of the Fungus

The fungus belongs to a group of fungi referred to as Ascomycetes because they bear the spores of the perfect or sexual stage in a club-shaped organ called an ascus. It usually overwinters in fallen walnut leaves infected during the preceding summer. Rarely, it overwinters in lesions on twigs of infected trees and in infected nuts on the ground. Primary infection occurs in the spring from ascospores. Discharged from the overwintered walnut leaves during rainy periods, the ascospores are carried upward by wind. If they lodge on a susceptible leaf under favorable conditions, the ascospores germinate, and leaf spots appear in about 14 to 16 days.

Secondary spores, the conidia, are produced on the diseased leaflets in minute black fruiting bodies or acervuli. Acervuli are abundant on the underside of leaflets, and occasionally, a few are found on the upperside. Conidia are colorless, usually crescent shaped, and divided by a cross-wall into two approximately equal cells. They are borne in large numbers and are spread from leaf to leaf by wind and spattering rain. The rapid increase and spread of walnut anthracnose in the summer and fall is usually by means of repeated generations of conidia. Leaves are most likely to be infected and to fall off during wet weather.



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Figure 3. — Anthracnose spots on black walnut fruits.

Control

No practical control of anthracnose is known for walnut trees growing under forest conditions, although these trees are often severely infected.

For shade, ornamental, and nut-producing trees, one means of control is to destroy old leaves on

the ground by raking and burning them. But this sometimes fails because fruiting bodies left behind on missed leaves or parts of leaves may release enough ascospores to cause primary infection.

Reference

Etiology and control of walnut anthracnose. FREDERICK H. BERRY. Univ. Maryland Agr. Exp. Sta. Bull. A-113, 22 p. 1960.